

Consequently, it was an object of the invention to provide an ignition coil device having a small number of parts, a small outside diameter and which may be manufactured using a simple method. More specifically, in an example embodiment of the invention, at least two parts of the ignition coil device, for example the primary spool and the coil insulating resin material, are integrated by being integrally molded out of the same resin so that the coil insulating resin "structure" not only insulates, e.g., the secondary coil, but also defines or serves as the primary spool. Thus, the number of parts comprising the ignition coil device can be reduced and manufacture of the device can be simplified. Additionally, since the coil insulating resin material concurrently insulates the secondary coil and defines the primary spool, the outside diameter of the ignition coil device can be reduced as compared to separately providing and forming these component parts.

A further unique characteristic of the combination claimed in applicant's claim 1 is that the primary windings can be applied after the coil insulating resin is applied. As a consequence, the primary windings are not impregnated with resin, which reduces the total use of resin in the ignition coil device. In this regard, in an example embodiment, it is preferable to construct the ignition coil device in such a way that the spaces between the windings of the primary coil are not impregnated with resin. Indeed, since a voltage applied to the primary coil is lower than a voltage applied to the secondary coil, it is not necessary to impregnate insulating resin material into the spaces between the windings of the primary coil to ensure insulation between the windings. Since in an example embodiment the coil insulating resin material and the primary spool are integrally formed from the same resin and so that the coil insulating resin material (also) defines the primary spool, the primary coil windings can be applied after the coil insulating resin is applied, so that this resin is not applied to the primary coil.

The amendments presented October 19, 2004 amended claim 1 so as to more clearly articulate the unique and advantageous structure of an ignition coil device in an

example embodiment of the invention. In this regard, claim 1 specifically characterizes the ignition coil device as comprising a coil insulating resin material that is impregnated into and cured in spaces between the secondary windings and further provides that this coil insulating resin material is integrally molded out of the same resin with and defines the primary spool. Thus, these "parts" are integrally molded with each other as a single part so that the coil insulating resin material defines the primary spool.

The Examiner acknowledges that Ogden does not teach or suggest that the primary "case" and insulating potting material are in fact the same material and are integrally formed. However, the Examiner takes the position that any suitable material may be used for the potting insulating material and the primary case, respectively, including the same material. Further, citing In re Larson, the Examiner has suggested that it would have been "obvious" to form these component parts in one piece. Applicant respectfully disagrees. The In re Larson case, it is submitted, relates to facts entirely distinguishable from the present case. In Larson, the claim was directed to a brake drum integral with a clamping means. The cited prior art comprised several parts that were rigidly secured together. In this connection, the Board concluded that the term "integral" is not limited to a fabrication of parts from a single piece, but includes other means for maintaining the parts fixed together as a single unit. In the present case, applicant has not simply claimed that the coil insulating resin and the primary spool are "integral" so as to also read on components "fixed" together as a single unit. Rather applicant has specifically claimed that these component "parts" are integrally formed out of the same resin with one another and that (thus) the coil insulating material defines the primary spool.

It is further respectfully submitted that the invention claimed is not only different from Ogden but provides significant and unanticipated advantages over a structure, of the type shown in Ogden, that has discrete and independently formed coil insulating material and primary spool structures. Indeed, as noted above, by forming the primary spool with the coil insulating resin, so that the radially inner portion of the coil insulating


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Appl. No. 10/727,519
April 6, 2005

resin permeates among and between the secondary coil wires and the radially outer portion of the coil insulating resin is configured to receive the primary coil, applicant's invention advantageously reduces the number of component parts of the ignition coil device thereby simplifying manufacture and the time required for assembly, and allows the diameter to be reduced. Moreover, the claimed structure allows (but does not require) the primary coil wire to be applied without insulating material so as to realize further advantage and savings. Under the circumstances, it is respectfully submitted that the invention is not obvious from Ogden.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in condition for allowance and an early Notice to that effect is earnestly solicited.

Respectfully submitted,

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